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MONDAY, DECEMBER 10TH, 1855.

REV. SAMUEL HAUGHTON in the Chair.

THE REV. JOSEPH A. GALBRAITH made a communication on the subject of the barometric measurement of mountain heights. He laid before the Academy the results of ten measurements of the height of the Two-Rock Mountain, made by Professor Haughton and himself during the years of *1853, 1854, 1855, with the view of settling some dubious* points connected with the use of the barometric formula. They commenced operations by measuring with the staff and level the exact height of the summit of this mountain above the floor of the magnetic observatory in the Fellows' Park, Trinity College. This height they found to be 1738·63 feet. With this standard Mr. Galbraith compared the heights calculated from the different barometric formulæ which have been proposed. The formulæ he computed from were as follows:

$$\text{I. } H \text{ (in fathoms)} = \left(1 + \frac{\theta}{492}\right) 10000 \times \log \frac{h}{h'}.$$

This is the formula commonly used in this country; θ being the mean temperature of the column, reckoned from 32°. In this formula no account is taken of the hygrometric condition of the air.

$$\text{II. } H = \left(1 + \frac{\theta}{492}\right) 10000 \times \log \frac{h - f}{h' - f'}.$$

In this formula, which was proposed some years ago by Professor Apjohn, f and f' are the observed tensions of aqueous vapour at the two stations.

$$\text{III. } H = \left(1 + \frac{\theta}{492}\right) 10000 \times \log \frac{h - \frac{3}{8} f}{h' - \frac{3}{8} f'}.$$

In this formula f is supposed to be the mean tension of vapour in the column. This modification of the formula was proposed by Mr. Rennie, in a paper read before the Academy, and which is now in course of publication.

The average result of the ten observations seemed to agree best with formula (I.); from which it would appear that the vapour in the air entered into the physical consideration of the question in so uncertain a manner, that, on the whole, it was safer to leave it out.

Mr. Galbraith stated that if proper precautions were used in the determination of the tension of the vapour at the two stations, it was not unlikely that formula (II.) would give results much more in unison with the levelled height than those he had already obtained.

By applying Mr. Rennie's modification, the heights are necessarily increased, and as the average height calculated from formula (I.) exceeded the true, formula (III.) should, on practical grounds, be excluded.

Mr. Galbraith made some observations on the coefficient 10000, and gave a full account of the various constants on which it depended.

The paper was referred to the Council for publication.

The following donations to the Museum were presented:

1. An iron stirrup, found in the river Boyne, at New Haggard Ford, above Trim; presented by Michael Odlum, Esq.

2. A token of Edward Marttin of Drogheda, found in a field at Moygaddy, county of Meath, near Maynooth; presented by the Duke of Leinster.